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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,701	12/16/2003	Chao-Huang Lin	MR3029-84	3449

4586 7590 10/21/2004

ROSENBERG, KLEIN & LEE
3458 ELLICOTT CENTER DRIVE-SUITE 101
ELLICOTT CITY, MD 21043

EXAMINER	
BAUMEISTER, BRADLEY W	
ART UNIT	PAPER NUMBER
2815	

DATE MAILED: 10/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/735,701	Applicant(s) LIN ET AL.	
	Examiner B. William Baumeister	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on *16 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of invention I in the reply filed on 9/22/04 is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 10 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamamoto et al. '171.

a. See e.g., the ABSTRACT and FIGs 10 and 11.

b. Regarding claim 12, the FIG 11 embodiment has two bumps; the claim language "for surface mounting technologies" constitutes an intended use; and the FIG 11 LED structure is capable of being used for surface mounting technologies.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3-9, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. 171 as applied to the claims above.

a. Yamamoto at least discloses rhomboherdral GaN-based, p-active-N LEDs formed on a sapphire substrate; having an n-contact trench for forming the electrodes at opposed ends of the longer diagonal; and being coated with a SiOx dielectric 15. Regardless of whether the reference teaches the other claimed features these were well known at the time of the invention. For example:

i. Regarding the inclusion of a transparent conductive layer over the p-type semiconductor layer, Yamamoto also discloses that the LED can be employed for top-surface emission applications (e.g., FIG 9). It was well known to those of ordinary skill in the art at the time of the invention to have employed a transparent conductive layer over the p-type semiconductor layer of a top-side emission GaN-based LED for the purpose of increasing the lateral current spreading in the p-type layer while simultaneously enabling light transmission through the conductive layer, thereby increasing the area of the active region that would be subject to carrier recombination, hence, light emission, and thereby increase the LEDs light emission efficiency.

ii. Regarding claims 10-13, the provision of adhesives, either instead of or in addition to contact bump(s), for LEDs was well known as was the use of LEDs in flip chip processes and surface mounting technologies (to the extent that the recitations of "flip chip processes" and "surface mounting technologies" set forth

any structure that was not sufficiently disclosed by Yamamoto. Note the product-by-process doctrine and the intended-use doctrine.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Yamamoto et al. '524, e.g., FIG 16;

b. Sassa et al. '109;

c. Motoki '258, e.g., FIGs 8 and 9;

d. Ishida '328;

e. Steigerwald et al. '218 disclosing various LED shapes and electrode configurations for improved light emission and current spreading, e.g., FIG 8A;

f. JP '146, showing e.g., the substrate cut along the M- and/or the A-planes.

g. JP '576

h. Lee et al., "Efficiency improvement in light-emitting diodes based on geometrically deformed chips," Proceedings of SPIE, Light-Emitting Diodes: Research, Manufacturing, and Applications III; Schubert et al. Eds., 27-28 January 1999, Vol. 3621, pp. 237-248, and particularly the ABSTRACT, FIG 3c, and page 243 last paragraph, discussing GaN-based LEDs.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to B. William Baumeister whose telephone number is (571) 272-1722. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BRADLEY BAUMEISTER
PRIMARY EXAMINER

B. William Baumeister
Primary Examiner
Art Unit 2815

October 20, 2004